"Improving endodontic treatment of chronic apical periodontitis with the use of depo of ipexpress and physiotherapy method of fluctuorization".

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ABSTRACT

In recent years, our country has seen positive trends in improving the effectiveness of endodontic dental treatment due to the introduction of modern technologies that allow predicting the results of dental treatment. However, in clinical practice, the number of unsuccessful treatment outcomes for caries complications has not decreased. It is known that the key to the effectiveness of endodontic treatment is the "three whales": cleaning, sterilization and obturation of the root canal system. However, at each stage of endodontic treatment, a significant number of errors are obtained. Thus, according to x-ray examination, it was found that only in 13.4% of cases the root canals were filled satisfactorily. But even with high-quality obturation, in 5-8% of cases, there is inflammation in the periodontium.

Key words: endodontic treatment, patients, apical periodontitis, clinic, effectiveness.

1. Introduction

The main errors that occur in the process of endodontic treatment are

- perforation of tooth;
- break of an endodontic tool or pin in the root canal;
- poor-quality passage and expansion of the root canal;
- poor-quality filling (obturation) of the root canal.

Errors in endodontic treatment can also be made at the diagnostic stage. The appearance of diagnostic errors is associated, among other things, with an insufficient frequency of x-ray examination. According to literature data, in private clinics, diagnostic x-rays for inflammation of the tooth pulp are performed in 19% of cases, and in municipal institutions – only in 8%. An x-ray image can reveal the number and configuration of the tooth roots, the location of root canals, their length, shape, and the degree of deposition of reparative dentin even before treatment begins. In the process of endodontic treatment, the doctor uses x-ray examination to control the working length and degree of mechanical treatment of root canals, as well as to determine the quality of obturation and long-term results of treatment. However, it is important to observe the safety regime for the patient, and in order to avoid excessive radiation, an electrometric method using an apexlocator should be used at certain stages of treatment.

The main condition for achieving positive results in endodontic treatment is the formation of correct access to the root canal. It should be remembered that "access-the fate of endodontics".

It was found that the use of 1% chlorophyllipt solution in the treatment of destructive forms of CVP is effective against strepto-and staphylococci.

Most studies on the treatment of chronic periodontitis analyze the response of periapical tissues depending on the filling material, with emphasis on the antiseptic properties of these materials, as well as their ability to stimulate tissue regeneration. It is believed that medicinal pastes, derived from the top, are most conducive to periodontal regeneration. At the same time, the conclusion about the stimulating effect of pericardial therapy on bone regeneration is based on the results of clinical and radiological studies, which is not a sufficiently objective criterion for assessing the condition of the periodontium.

Antiseptic treatment of root canals is one of the main components of endodontic treatment of periodontal diseases. The microflora located in the root canals not only causes and supports inflammatory processes in periodontal tissues, but also is a focus of chronic infection for the entire body. Practical doctors do not always take into account the etiopathological factors of periodontitis, and empirical and groundless prescribing of antibacterial drugs to patients often causes the appearance of resistant strains and microbes . As a result, there is an inefficiency of the therapy and a change in the composition of the root canal microflora, the involvement of other microorganisms that were not previously characteristic of this process in the infectious process.

2. Main part

The use of depophoresis of copper hydroxide-calcium shown first and foremost in endodontic treatment of teeth with root canals impassable. In addition, this method is recommended for severe infection of the contents of the canal, tool breakage in the lumen of the canal (without going beyond the tip), in the case of unsuccessful dental treatment with "traditional" methods, with the presence of a wide apical opening. Along with this, depoforesis is recommended for use in the method of vital pulp extirpation (it requires the use of a special rather time-consuming technique). In our opinion, the recommendation to use depoforesis for the treatment of teeth previously treated with resorcinol-formalin is controversial and requires further study. This is due to the fact that, as is known, resorcinol-formalin mixture does not conduct an electric current, so full-fledged impregnation of the apical part of the channel with copper-calcium hydroxide during depoforesis, that

is, under the influence of an electric current, is unlikely.

Contraindications to depoforesis are: malignant neoplasms, severe forms of autoimmune diseases, pregnancy, intolerance to electric current, allergic reaction to copper, as well as exacerbation of chronic periodontitis, suppurated jaw cyst and the presence of a silver pin in the channel.

It should be remembered that before depophoresis Aula in the channel must be devitalized.

It should also be noted that depophoresis is a medical manipulation, and it is performed not in the physiotherapy room, but by a dentist directly in the chair.

Thus, based on the analysis of the available data in the modern literature on endodontics, the following conclusions can be drawn:

- 1. the Problem of treatment of chronic apical periodontitis is one of the important, not fully solved and promising tasks of therapeutic dentistry.
- 2. In the treatment destructing forms of periodontitis has clinical experience necessitates optimization of reparative regeneration of periodontal and bone tissue of alveolar arches of the jaws to achieve a positive treatment outcome.
- 3. it is Important to include in the complex endodontic treatment of CVP physical factors that can actively influence the main links in the pathogenesis of the parotid pathological process, the elimination of inflammatory and destructive foci and tissue regeneration.

3. Purpose of research

Improving the effectiveness of treatment of chronic apical periodontitis by improving endodontic treatment of the disease with separate and combined use of new methods of depo – and apex-foresis with joint application of fluktuorization.

4. Research materials and methods

Examinations and treatment of 81 patients aged 18 to 55 years with granulating and granulomatous forms of chronic apical periodontitis (in 108 multi-root teeth) were performed.

The distribution of the examined patients by types of endodontic dental treatment is shown in table 1.

All patients, regardless of the type of endodontic treatment used, underwent bacteriological examination of the root canal contents, periodontal x - ray examination, and electrodontodiagnostics (EDI) from the root canal mouths twice before and after the course of treatment.

 Table 1

 Distribution and number of patients by type of endodontic treatment

No	Type (method) of treatment	Number of patients	Number of teeth
1	Traditional treatment	21	28
2	Treatment with depophoresis	20	26
3	Treatment with apex phoresi	18	24
4	Combined treatment with depophoresis, apex physiotherapy electrophoresis and method of fluctuorization	22	30
Subtotal		81	108

The teeth of the first group of patients were treated in the traditional way, that is, endodontic treatment of the dental channels was performed using the Crown-Down method, the channels were washed with antiseptic-1% chloramine solution, 2% sodium hypochloride solution. The expansion of the apical hole was carried out using a drill by turning it around the axis of the tooth by no more than 45o. The level of the apical opening was determined using a root needle (inserted into the root canal until the patient felt a slight prick and was subjected to a control radiograph, followed by filling of the passable root canals by cold and hot condensation of gutta - percha with silers (without using depot and apex – Forez). Resorcinol-formalin method was used in the channels of teeth that were not passed instrumentally.

Patients of the second group had their teeth treated with depophoresis using the "Original II" device (Germany). The methodology of depophoresis of copper hydroxide-calcium was as follows. First, the carious cavity was dissected, the tooth cavity was opened and endodontic access was created. It is believed that three depoforesis sessions with an interval of 8-14 days are sufficient to ensure a guaranteed, lasting effect. On the first visit, the root canals were opened and expanded by about 2/3 of the length, then washed with a suspension of copper-calcium hydroxide. The tooth was isolated from saliva and dried. In this case, the patient should be positioned so that the drug does not flow out of the channel. Then, a suspension of copper-calcium hydroxide was introduced into the treated part of the channel using a channel filler. Then

a negative needle electrode (cathode) was inserted into the channel to a depth of 4-8 mm, and the tooth cavity was covered with sticky wax. A positive passive electrode (anode) was placed behind the cheek from the opposite side through a cotton roller moistened with tap water. The current was slowly increased until a slight sensation of heat or tingling appeared in the tooth area. The procedure takes 10 minutes. After the procedure, everything is removed, a suspension of copper-calcium hydroxide is left in the channels and the tooth cavity is hermetically sealed with a bandage made of artificial dentin.

Then, at intervals of 7-14 days, 2 and 3 sessions of depoinophoresis were performed.

After the last procedure, the treated part of the channel (2/3 of the length) was sealed with a special alkaline copper content with atatsamite cement, which is included in the depoforesis kit. At the same time, a permanent seal was placed.

To perform apex-foresis, patients of the third group used a single-core silver-copper electrode in Teflon insulation, which was placed in a pre-expanded patency (2/3 – 1/2 of the root length up to the 20th file size) in a root canal moistened with saline solution. The silver-copper electrode was the anode. The second electrode was placed on the forearm of the right hand. In the absence of periapical changes, 2 procedures were prescribed per day lasting 5 minutes, and the course of treatment for destructive forms of chronic apical periodontitis consisted of 3 5-minute procedures performed daily. During treatment, the current strength during the procedures ranged from 1-0. 5 mA. The amount of electricity for 1 procedure was 2.5-5 mA x min.

In the teeth of the fourth group of patients, after traditional instrumental and medical treatment of root canals, a depoforesis session was performed at a dose of 5 mA with copper-calcium hydroxide. Then, instead of the second depoforesis session (after 7 days), an apex-foresis with a silver-copper conductor was performed. An hour later, a second session of depoforesis was performed at the same dose. On day 14, apex-foresis and depophoresis of teeth were performed again. In the end, patients received 3 sessions of depoforesis and 2 sessions of apex-foresis for the course of combined dental treatment. After that, the passable channels of the teeth were immediately filled using cold and hot condensation of gutta-percha with silers (an-plus, cortisonol, viedent, etc.). Then, to prevent post-sealing pain, the method of fluktuorization was used. Two 3 x 4 cm plate electrodes were placed transversely on the jaw area, a cathode was placed above the affected tooth, and the electrodes were fixed with a bandage. They were affected by the II or III form of medium-intensity current. The duration of the procedure is 6-8 minutes daily. The course of treatment is 7-8 procedures.

The root canals that were not instrumentally passed within their passable part were filled with atacamite. Tooth crown was restored with the help of seals and tabs.

5. Research results and discussions

The practical value of the work is that it is proved that the complex endodontic treatment of chronic apical periodontitis with the use of new methods of depoforesis of copper-calcium hydroxide and apex – foresis using a silver-copper conductor is expedient. A unified scheme of application has been developed and medical tactics for complex endodontic treatment of chronic apical periodontitis with the combined use of depot-, apex – foresis and physiotherapy method of fluktuorization has been justified.

The proposed improved method of treatment of chronic apical periodontitis can improve the quality and effectiveness of treatment, reduce the number of complications in the near future after filling the tooth channels and get favorable clinical and radiological results in a short time. With the combined use of depot—, apex-Forez and physiotherapy method of fluktuorization, it is possible to increase the effectiveness of conservative endodontic treatment of CVP in the conditions of outpatient dental reception of General practice.

Analysis of the results of treatment of chronic apical periodontitis using various types of therapy showed that 6 (28.5%) patients who received traditional treatment had complications in the form of pain and hyperemia of the gums in the area of the mine tooth on day 7-14. And with the use of root canal depoforesis, similar complications were observed in 2 (10%) patients, with apex-foresis - in 1 (5.5%) patients, and with the combined use of depo-, apex – foresis and physiotherapy method of fluktuorization, complications were not observed at all. If complications were detected, patients were prescribed analgesics and anti-inflammatory drugs (analgin, aspirin, paracetamol).

The results of repeated x-ray examinations after 6 and 12 months showed that with traditional treatment, the number of positive x-ray images is 6 (28.5%) cases at 6 months and 4 (19%) cases at 12 months of the study. With depoforesis, these indicators are respectively equal to 8(40%), 9(45%) there were 12(66.6%) and 15(83.3%) cases with apex-forese, and they significantly (P<0.05 – 0.001) differ from traditional treatment. The combined use of depo -, apex-Forez and physiotherapy method of fluktuorization after 6 and 12 months revealed a positive x-ray picture in 20(90.9%) and 22(100%) cases, respectively. These indicators are 1.3-2.2 times higher than similar data when using depo - and apex-forest separately.

Analysis and comparison of the results of long - term radiological studies (6 and 12 months), depending

on the type of treatment used, showed that the positive dynamics of radiological data, corresponding to a decrease in observations estimated by 4 and 5 points of the modified PAJ index, occurred in 4(19%) patients with traditional treatment, in 16(80%) - with depophoresis, in 15(83.3%)-with apex - foresis, and in 22(100%) - with combined treatment with depo—, apex-foresis and physiotherapy fluktuorizatsii.

After 6-12 months after the end of combined treatment with depo -. apex-Forez and physiotherapy method of fluktuorization, all patients had no complaints and the gums in the area of the treated teeth had a normal picture. No pathological periapical changes were observed on x-rays of the treated teeth.

Thus, the use of depo - and apex-Forez in the complex endodontic treatment of chronic apical periodontitis leads to a significant (P<0.05-0.001) rapid acceleration of the processes of regeneration of periapical tissues in comparison with the traditional method of treatment. At the same time, the combined use of depo—, apex-foresis and physiotherapy method of fluktuorization has a 1.3-2.2 times more effective effect on the condition of the periapical tissue of the teeth than using them separately. This is reflected in a decrease in the number of complications, acceleration of the process of bone regeneration in the area of apical periodontitis, and thus a decrease in the number of visits to the dental institution.

Based on our own research, we recommend the following ways to improve the quality of complex endodontic treatment of chronic apical periodontitis with difficult and impassable root canals of teeth.

So, it is no secret that, despite the undoubted success achieved by domestic therapeutic dentistry, the quality of endodontic treatment in some cases remains unsatisfactory.

At the same time, foci of acute and chronic inflammation in the pulp and periodontium cause the patient physical and moral inconvenience, can serve as a source of odontogenic inflammatory processes in the maxillofacial region and neck, can complicate the course of diseases of internal organs and systems, provoke the development of focal-related (General somatic) diseases. Therefore, timely, adequate and effective endodontic treatment is one of the most important areas of work of a dentist-therapist.

The results of the work are implemented in the practice of dental clinics of the Republic and are used in the educational process of the dental faculty of the Bukhara State medical Institute when giving lectures and conducting practical classes with students.

6. Conclusions

- 1. the use of copper-calcium hydroxide depophoresis and apex-foresis of the silver-copper conductor of the root canal of teeth in the complex endodontic treatment of chronic apical periodontitis leads to a 2.0-3.3 one-time better reduction of facultative anaerobic bacteria than traditional treatment. At the same time, the most pronounced (1.5-2.5 times more) antibacterial effect is the combined use of depot -, apex Forez and physiotherapy method of fluktuorization, than the use of them separately.
- 2. the use of depo and apex-Forez in the treatment of chronic apical periodontitis leads to a significant (P<0.05-0.001) rapid acceleration of the processes of regeneration of periapical tissues in comparison with traditional methods of treatment of the disease. At the same time, the combined use of depo—, apex-foresis and physiotherapy method of fluktuorization has a 1.3-2.2 times more effective effect on the condition of the periapical tissue of the teeth than using them separately, which is expressed in reducing the number of complications, accelerating the process of bone regeneration in the apical periodontal area and thereby reducing the number of visits to the dental institution.
- 3. it was Found that the immediate and long-term results of endodontic treatment of chronic apical periodontitis using depot—, apex-foresis and physiotherapy method of fluktuorization in our modification can be evaluated as positive and recommend their use in clinical dentistry.

REFERENCES

- [1] Arutyunov S. D., Tsarev V. N., Nosik A. S. Selection and application of new antiseptic drugs for endodontic treatment of chronic periodontitis//ROS. stoma. journal. -2007. no. 3. P. 4-6.
- [2] Boikova S. P., Zayratyans O. V. Clinical and morphological characteristics and classification of caries and its complications (pulpitis, periodontitis, radicular cyst) in accordance with the requirements of the International classification of dental diseases //Endodontics today.-2008. no. 1. P. 11-14.
- [3] Borovsky E. V. Clinical endodontics.- Moscow, 1999. 176 p. Britova A. A. Influence of low-intensity laser radiation on the course of experimental pulpitis//Endodontics today .- 2004. № 1-2. P. 24-27
- [4] Britova A. A. Composition and properties of the microflora of dental caries dentin in pulp inflammation//Endodontics today. 2008. no. 1. P. 15-16.
- [5] Kodylev A. G., Shumsky A.V. application of the erbium-chromium laser in the complex treatment of periodontitis//Endodontics today. 2008. no. 1. P. 17-19.
- [6] Kukushkin V. L., Kukushkina E. A., Kovaleva I. G. Digital photography in endodontics, or travel inside the tooth //Endodontics today. 2008. no. 1. P. 9-12.

[7] Maksimovsky Yu. M., Mitronin A.V., Zueva D. D. Assessment effectiveness of endodontic treatment of chronic apical periodontitis using materials containing mineral trioxide aggregate //Endodontics today. - 2007. - no. 1. - P. 12-15